

AS 101: The Solar System (Fall 2015)

Instructor:

Professor Catherine Espaillat

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Office hours:

Wednesdays 1:00-3:00 pm, Fridays 3:00-4:00 pm or by appointment

Teaching fellows:

Michael Manighalam (mbmanigh@bu.edu)

Office hours: Mon 5-6pm, Tues & Thurs 4-5pm in CAS 524

Danielle Pahud (dpahud@bu.edu)

Office hours: Mon 2-3pm, Tues 10-11a, Fri 1-2pm in CAS 524

Jonathan Wurtz (jwurtz@bu.edu)

Office hours: Mon, Tues, Thurs 10-11am in CAS 524

Lecture meeting time and location:

Mondays, Wednesdays, and Fridays at 11-noon in CAS 522

Lecture schedule can be found below.

Course Description:

AS101 is an introduction to the Solar System. In order to understand the Solar System in the context of the Universe, we will explore key concepts in astronomy, how planets form, and planets orbiting other stars in addition to the Sun and planets in our Solar System.

The goal of the course is to help students understand some basic physical principles, the scientific process, and to appreciate our place in the universe. Note that the syllabus may change based on class progress. Changes will be announced in class.

Prerequisites:

This course is taught at the introductory level and is intended for students from any college at the university. There are no requirements beyond high school level algebra and science. The Department of Astronomy also offers a more advanced introductory course (AS 202) for those prospective or active physical science or engineering majors.

Required Textbook:

For this course we will be using the Seventh Edition of “The Solar System: The Cosmic Perspective,” by Bennett, Donahue, Schneider, and Voit published by Pearson.

Website:

Course materials and grades will be posted on learn.bu.edu.

Grading:

- 20% homeworks
- 30% in-class exams
- 25% final exam
- 5% participation
- 20% lab exercises

All requests for grading corrections need to be made in writing.

Homeworks: The purpose of the homeworks is to keep you on track with the readings and give you frequent feedback on how you are doing in the course. There will be 5 homeworks and the lowest homework grade will be dropped. The homeworks will consist of short essays and math problems and will be assigned in lecture. Homeworks will be due on Wednesdays at 11am, except on weeks when exams are scheduled or there is a holiday. Homeworks that are handed in during or after class will be considered late. Late homeworks will have 25% deducted for each day they are late. Also, homeworks must be done entirely in blue/black ink or in pencil. They should show all work and should contain your name, BUID, and should be stapled. Homeworks that do not satisfy these requirements will be returned and considered late.

Exams: The exams will test your knowledge of ideas discussed, simple problem solving skills, and your ability to write brief essays about Astronomy. We will have 3 in-class exams and one final exam. The lowest score of the in-class exams will be dropped. No make-up exams will be given. If you need to miss an exam for any reason, that will be the exam that you drop as your lowest score. You cannot miss the final exam and there are no opportunities to take it at a different time. If you have been certified as needing to take an exam under special circumstances, please see me privately. The first exam will cover Chapters 1-3. The second exam will cover Chapters 4-6. The third exam will cover Chapters 7-8 and 11. The duration of each in-class exam will be one academic hour or 50 minutes. There will be one final exam at 12:30 – 2:30 pm on Wednesday Dec 16 which will cover Chapters 12-14. The location of the final exam will be in Questrom SMG 105. Please note the registrar may change the exam time, so be sure to confirm this later in the semester.

Participation: In order to help engage you in the material, it is expected that you participate in class. Your participation grade will be based on the completion of in-class minute papers. These minute papers will be done randomly and cannot be made up so attendance is strongly encouraged. The four lowest minute papers will be dropped in

calculating the final grade. Additional drops will not be granted unless the student has a letter from a Dean.

Lab Exercises: This is a laboratory course where lab reports constitute a major part of your final grade. The lab grade will be based on 6 indoor lab exercises and 2 observing lab exercises. We will drop the lowest score from the labs (either one of the indoor labs or one the observing labs, not one of both) so if you are unable to complete one of the exercises, it will be dropped. Note that since this is a lab course, if you fail the lab component, you fail the class. That is, if you have an A on all your homeworks, exams, and participation, but fail the lab component, you will get an F in this course.

Indoor Labs

The indoor labs will be performed in assigned sections lead by your TF. You must be enrolled in one of the lab sections (B2-B9,C1) in addition to the lecture (B1). The lab report will be due one week after completion of the lab. Late indoor lab reports will have 25% of the maximum possible score deducted for each day they are overdue (i.e., labs will not be accepted more than 4 days past the deadline). The indoor lab schedule can be found below. Labs must be printed out and brought to lab. They can be downloaded from <http://www.bu.edu/astronomy/academics/undergraduate-studies/manuals/>

Observing Labs

The Department of Astronomy's J. B. Coit Observatory is located on the roof of the CAS building. Observing labs will be done here and each lab should take about an hour to complete. There are two observing labs. Night Lab #1 occurs during the first half of the semester and Night Lab #2 occurs during the second half of the semester. It is essential not to wait until the end of the possible observing sessions to observe since weather is unpredictable. Typically, there are only about 8 clear nights per semester. If you miss a Night Lab because the last few weeks of that session are cloudy, no make-up will be possible. To check if the observatory will be open on a given night, call 617-353-2630 for a recorded message about 1 hour before the lab start time. Choose option #1 to see if the night lab will be held that night and option #2 for other night lab information. The lab report will be due one week after completion of the lab (unless you attend the lab after Dec 3rd). All night labs done after Dec 3rd are due at the beginning of the last lecture (Dec 9th). Late observing lab reports will have 25% of the maximum possible score deducted for each day they are overdue. Lab reports will not be accepted after Dec 9th. The observing lab schedule can be found below. Labs must be printed out and brought to lab. They can be downloaded from <http://www.bu.edu/astronomy/academics/undergraduate-studies/manuals/>

Planetarium Visit

The Boston Museum of Science has a planetarium capable of displaying the night sky as seen from any point on Earth. We have arranged a planetarium visit (see last page of syllabus for dates). If you attend, you will earn extra credit which will count as extra credit towards your lab grade. Note that it is not possible for us to schedule an additional

planetarium visit. You only need to attend one of the shows. It is not possible to earn additional credit by attending both shows.

Attendance & late policy:

You are expected to attend class. If you miss a class, check the course website for any assignments or news and talk with a fellow student to learn what else you missed. Under normal circumstances, late work will have 25% of the maximum possible score deducted for each day past the due date. The exams must be taken at the scheduled date and time.

Classroom etiquette:

Please arrive punctually for the start of class and remain for the duration of the class. If you arrive late or depart early, try to minimize the disruption this causes to other students. Turn mobile phones off during class. Students who interfere with the academic process of the class will be asked to leave the class. This includes, but is not limited to, students that are continually late, speak while the instructor is speaking during class, or do not participate in the in-class activities.

Academic integrity:

Group study is encouraged, but work you hand in must be your own. Your lab reports should not be copied. Work that is copied will not be given any credit. If an answer in a homework question or a lab report requires written sentences, do not copy your answer directly from the textbook, a website, or any other source. All students are expected to follow the BU Academic Conduct Code (www.bu.edu/academics/resources/academic-conduct-code/). Cases of suspected academic misconduct will be referred to the Dean's Office.

Class Schedule:

Lectures

<i>Week</i>	<i>#</i>	<i>Date</i>	<i>Topic</i>	<i>Chapter</i>
1	1	Wed Sep 2	Welcome	-
	2	Fri Sep 4	A Modern View of the Universe	1
2		Mon Sep 7	NO CLASS	
	3	Wed Sep 9	Chapter 1 continued	1
	4	Fri Sep 11	Chapter 1 continued	1
3	5	Mon Sep 14	Discovering the Universe	2
	6	Wed Sep 16	HW#1 Due; Chapter 2 continued (Note: last day to add course)	2
	7	Fri Sep 18	Chapter 2 continued	2

4	8	Mon Sep 21	Chapter 2 continued	2
	9	Wed Sep 23	HW#2 Due; The Science of Astronomy	3
	10	Fri Sep 25	Chapter 3 continued	3
5	11	Mon Sep 28	Chapter 3 continued	3
		Wed Sep 30	EXAM #1	1-3
	12	Fri Oct 2	Making Sense of the Universe	4
6	13	Mon Oct 5	Chapter 4 continued	4
	14	Wed Oct 7	Chapter 4 continued (Note: last day to drop course)	4
	15	Fri Oct 9	Light and Matter	5
7		Mon Oct 12	NO CLASS	-
	16	Tue Oct 13	Chapter 5 continued	5
	17	Wed Oct 14	HW#3 Due; Chapter 5 continued	5
	18	Fri Oct 16	Telescopes	6
8	19	Mon Oct 19	Chapter 6 continued	6
		Wed Oct 21	EXAM #2	4-6
	20	Fri Oct 23	Our Planetary System	7
9	21	Mon Oct 26	Chapter 7 continued	7
	22	Wed Oct 28	Chapter 7 continued	7
	23	Fri Oct 30	Formation of the Solar System	8
10	24	Mon Nov 2	Chapter 8 continued	8
	25	Wed Nov 4	HW#4 Due; Chapter 8 continued	8
	26	Fri Nov 6	Jovian Planet Systems	11
11	27	Mon Nov 9	Chapter 11 continued	11
		Wed Nov 11	EXAM #3	7-8, 11
	28	Fri Nov 13	Asteroids, Comets...	12
12	29	Mon Nov 16	Chapter 12 continued	12
	30	Wed Nov 18	Chapter 12 continued	12
	31	Fri Nov 20	Other Planetary Systems	13
13	32	Mon Nov 23	Chapter 13 continued	13
		Wed Nov 25	NO CLASS	-
		Fri Nov 27	NO CLASS	-
14	33	Mon Nov 30	Chapter 13 continued	13
	34	Wed Dec 2	HW#5 Due; Our Star	14
	35	Fri Dec 4	Chapter 14 continued	14

15	36	Mon Dec 7	Chapter 14 continued	14
	37	Wed Dec 9	Synthesis	-
		Wed Dec 16	FINAL EXAM	12-14

Indoor labs

There are ten sections that meet in CAS 521 starting on Sep 8 and ending on Dec 5.

- B2 Fridays 12:30-2 pm (TF: Michael Manighalam)
- B3 Tuesdays 2-3:30 pm (TF: Danielle Pahud)
- B4 Tuesdays 11-12:30 pm (TF: Michael Manighalam)
- B5 Thursdays 12:30-2 pm (TF: Danielle Pahud)
- B6 Thursdays 2-3:30 pm (TF: Danielle Pahud)
- B7 Wednesdays 3:30-5 pm (TF: Jonathan Wurtz)
- B8 Wednesdays 12:30-2 pm (TF: Jonathan Wurtz)
- B9 Mondays 1:30-3 pm (TF: Jonathan Wurtz)
- C1 Thursdays 11-12:30 pm (TF: Michael Manighalam)

The labs you will cover are the following:

- Skygazer-Orrery, Sept 8 – 21
- Gravity, Sept 22 – Oct 5
- Spectroscopy, Oct 6 – 20
- Reflectance, Oct 21 – Nov 3
- Cratering, Nov 4 – Nov 17
- Extrasolar planets, Nov 18 – Dec 8

More information about the indoor labs will be available in the sections.

Outdoor labs

Observing Lab #1 (N1) Motions in the Sky
 Sept 8 to Oct 22 Mondays, Tuesdays, Thursdays at 8:30pm

Observing Lab #2 (N2) What's the Name of that Star
 Oct 26 to Dec 8 Mondays, Tuesdays, Thursdays at 8:30pm

Planetarium Visit

Sept 28 and Sept 29 at 6:30pm